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Abstract

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A fast division method ^{which} ~~is disclosed in the present invention. It~~ uses a smaller quotient digit set of $\{-1, 1\}$ than $\{-1, 0, 1\}$ that used by known algorithms, therefore accelerates the speed of calculation. Partial remainders can be computed with the signs of remainders decided independently and in parallel. By taking the absolute values of the remainders, we can successively subtract the remainders without the need of knowing the signs of remainders, while signs of the remainders can be decided in parallel and independently at the same time. The algorithm adopts non-restoring division operation and CSA type of operation for fast subtraction. The algorithm is also an on-line algorithm that facilitates highly pipelined operation while it is much simpler than the existing on-line algorithms.